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ABSTRACT

A model for projecting the flow of faculty as a result of various decisions related to tenture is presented. This model uses the proposition that future tenure proportions are determined by additions and departures from the tenured and untenured faculties. Its most basic assumption is that the rates of these additions and departures will remain constant throughout the proposed projection period. It is pointed out that the rates used in the model, which are based on the institution's past practices, such as retirement age, can be altered to test the effects of the adoption of new policies. However, some variables, especially the rate of departure through resigning, are more dependent on forces outside the university. A schematic representation of the model is provided. (SPG)

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# A MODEL FOR PROJECTING TENURE PROPORTIONS AND FACULTY FLOW

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## Introduction

It became fashionable in the 1950s and 1960s to judge the quality and vitality of a university on the basis of a high rate of growth in resources, capital facilities, faculty, enrollment, number of programs, and even number of campuses. Not only was managing for rapid growth more fun, but it was also a way to make new choices and commitments at the relatively painless margin of expansion while the fixed commitments of the institution took care of themselves. The opportunities for quality and innovation were enlarged because of this margin of growth. But if growth is not feasible, must innovation and quality suffer? Overall higher education enrollment growth will taper very soon and enrollments will very likely be static for some years in the 1980s. Because resources are to a large extent enrollment-based, budgets will be sharply contrained. Many universities are abandoning growthmanship for viability under steady-state conditions.

Stability, in the sense of a steady and sustainable trejectory through time, is much more beneficial to the long-term character of a university than is oscillation. An institution that goes through rapid growth intervals pay a price for it.

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If the number of new junior faculty appointments per year is so large, in relation to the existing faculty leadership, then recruitment and quality screening become difficult. Promotions of nontenure faculty to tenure come to easily under rapid growth. An appreciable number of new senior faculty are required during rapid growth, and to get first-rate people a university must usually offer them both a salary premuim and substantial nonsalary inducements. Tapering off after rapid growth creates holes in the composition of faculty by rank and age, and these persist for a long time.

This model for projecting the flow of faculty as a result of various decisions related to tenure is set forth to provide administrators with an added tool to aid them in their management for stability. Stability in an institution means an operation that is reasonablely smooth, produces solid institutional results each year, contains enough flexibility to accommodate some response to new opportunities and is steady enough so that crisis adjustments are not imposed on the rather delicate balance of the university's internal organization.

Investigations of the flow of faculty through institutions range from complex simultaneous equations through simulations of varying complexity to stochastic models. This model, however, is a very simple one, operationally, that identifies faculty members in terms of their tenure status. Thus, the manipulation of the components of the model makes it possible to identify the influence of tenure and tenure policy.

The Model:

Any model proposing to project faculty flow and tenure proportions must first consider the present tenured faculty so that the carry-over can be determined. Basically, the carry-over tenured faculty for any given year should be equal to the number of these possessing tenure from the previous year minus the number of those retiring and resigning. To illustrate, suppose it was desired to determine the number of carry-over tenured assistant professors, (TAT), for a given year, n, ($TAT_n$). Let $TAT_{n-1}$ represent the number of tenured assistant professors from the previous year. This information can be obtained through a simple counting procedure. However, in order to determine the number of assistant professors retiring and resigning, it is necessary to establish a retiring rate, $RT_{at}$, and a resigning rate, $RS_{at}$. These rates are, of course, based on occurances in the past. Additionally, since this model concerns itself with individual ranks, a promotion rate among tenured faculty must be computed. Each individual rank promotion rate (w) will be a function of two other variables: X, the percentage of tenured faculty of that rank, employed at the same time, that eventually became promoted; and, Z, the average number of years all tenured faculty remain in each of the ranks. Symbolically, we have $w=^{X}/_{Z}$. Let us examine the situation in a hypothetical City University.

Table 1
Total Tenured Faculty (1977-78)

| | Prof. | Assoc. | Asst. | Instr. |
|---|---|---|---|---|
| 1973-74 | 41 | 25 | 12 | 2 |
| 1974-75 | 44 | 30 | 15 | 2 |
| 1975-76 | 45 | 37 | 15 | 1 |
| 1976-77 | 50 | 40 | 18 | 1 |
| 1977-78 | 53 | 47 | 20 | 1 |

Table 2

Number of Tenured Faculty members Retiring from City University. (figures in parentheses represent proportion of total tenured faculty of that rank).

| | Prof. | Assoc. | Asst. | Instr. |
|---|---|---|---|---|
| 1973-74 | 2(.05) | 1(.4) | 0(.00) | 0(.00) |
| 1974-75 | 1(.02) | 2(.7) | 1(.07) | 0(.00) |
| 1975-76 | 1(.02) | 1(.3) | 1(.07) | 0(.00) |
| 1976-77 | 2(.04) | 1(.3) | 0(.00) | 0(.00) |
| 1977-78 | 2(.04) | 0(.0) | 0(.00) | 0(.00) |

Hence, for the last five years, tenured faculty members have been retiring at the following rates: Professors, $RT_p$=.03; Associate Professor, $RT_{ac}$=.03; Assistant Professor, $RT_{at}$=.03; and Instructors, $RT_I$=.00.

Table 3

Number of tenured Faculty Members Resigning from City University (figure in parentheses represent proportion of total tenured faculty of that rank).

| | Prof. | Assoc. | Asst. | Instr. |
|---|---|---|---|---|
| 1973-74 | 2(.05) | 1(.04) | 0(.00) | 0(.00) |
| 1974-75 | 3(.07) | 1(.04) | 1(.07) | 0(.00) |
| 1975-76 | 1(.02) | 2(.05) | 1(.07) | 0(.00) |
| 1976-77 | 2(.04) | 1(.03) | 0(.00) | 0(.00) |
| 1977-78 | 2(.04) | 1(.02) | 0(.00) | 0(.00) |

Thus, for the last five years, tenured faculty members have been resigning at the following rates: Professors, $RS_p$=.04;

Associate Professors, $RS_{ac}$=.04; Assistant Professors $RS_{at}$=.03; and Instructors, $RS_i$=.00.

On the average, tenured instructors at City University stay in that rank for six years ($Z_i$=6) before being promoted or leaving; Assistant professors, five years, $Z_{at}$=5 and Associate professors, four years, $Z_{ac}$=4.

Table 4

Proportion of tenured faculty, starting at the same time that were eventually promoted to higher rank.

| | Assoc. | Asst. | Instr. |
|---|---|---|---|
| 1973-74 | .3 | .3 | .1 |
| 1974-75 | .3 | .2 | .1 |
| 1975-76 | .2 | .2 | .1 |
| 1976-77 | .1 | .1 | .0 |
| 1977-78 | .1 | .1 | .0 |

From the table we conclude that over the last five years, the average proportions are: Associate Professors, $X_{ac}$=.2; Assistant Professor, $X_{at}$=.2; and Instructors, $X_i$=.1.

It is now possible to compute the promotion rates $W=X/z$ for each of the ranks. They are: associate professors, $W_{ac}$=.05; assistant professors $W=_{at}$=.04; and instructors, $W_i$=.02.

Therefore, to project the number of carry-over tenured faculty members having the rank of assistant professor for the 1975-76 academic year, the following variables must be considered: the tenured assistant professor from 1974-75, $TAT_{n-1}$; those retiring, $(RT_{at})$ $(TAT_{n-1})$; those resigning $(RS_{at})$ $(TAT_{n-1})$; the tenured instructors promoted to assistant professor rank, $(W_i)$ $(TI_{n-1})$; and the tenured assistant professors who were promoted

to a higher rank, $(W_{at})$ $(TAT_{n-1})$. Thus, the following expression emerges:

$$TAT = TAT_{n-1} + (W_i)(TI_{n-1}) - (RT_{at})(TAT_{n-1}) - (RS_{at})(TAT_{n-1}) - (W_{at})(TAT_{n-1})$$

Substitution yields

$$TAT = (20) + (.02)(1) - (.03)(20) - (.04)(20) = 18.02$$

or approximately 18 faculty members possesing tenure during the previous year will have the rank of assistant professor for the year 1978-79.

If it is desired to project the number of carry-over tenured faculty having the rank of assistant professor for the next five years or any other length of time, it is necessary to take successive iterations in which $TAT_n$ for one year becomes $TAT_{n-1}$ for the next. Similar computations are made for the carry-over for the rank of associate professor $(TAC_n)$. However, slight adjustments must be made for the other two ranks. Since the rank of instructor $(TI_n)$ is the lowest rank, and the number of tenured professor $(TP_n)$ cannot be reduced by promotion to a higher rank.

Let us now focus on the untenured faculty, for surely some of them will join the ranks of the tenured. In terms of absolute numbers, the total untenured faculty should equal the number of untenured staff for the previous year plus the new appointments minus those receiving tenure and those leaving the university. Again, the number of untenured faculty from the previous year can be determined by counting, but rates, based on the last five years, must be computed for new appointments

the granting of tenure, and for those leaving the university. However, since this model deals with individual ranks, an added variable must be considered--the promotion rate for the untenured in each rank. This variable, m, like its counterpart for the tenured, is dependent upon two other variables. The first, n, is the percentage of untenured faculty, employed at the same time, that eventually became promoted; the second, y, is the average number of years all untenured faculty remain in each of the ranks. Thus, we have the relationship $m=^{n}/y$. After the adsolute number of untenured faculty members in each of the ranks has been established for the previous year, the rate for those receiving tenure must be determined. This variable, t, as all others in this model, is based on the institution's past practices. Hence, the rates used in projecting tenure proportions will be determined from the tenure-granting mechanism employed by the university for the past five years. The tenure-granting rate is a reflection of two considerations: q, the percentage of untenured faculty, employed at the same time, that eventually received tenure; and (p), the average number of years spent in non-tenure status. Symbolically, we have $t=^{q}/p$. Let us examine the situation at City University.

Table 5
Total Untenured Faculty (1977-78)

| | Prof. | Assoc. | Asst. | Instr. |
|---|---|---|---|---|
| 1973-74 | 15 | 40 | 50 | 72 |
| 1974-75 | 16 | 48 | 53 | 71 |
| 1975-76 | 15 | 50 | 55 | 69 |
| 1976-77 | 15 | 49 | 57 | 70 |
| 1977-78 | 16 | 52 | 60 | 72 |

Table 6

New appointments to the untenured faculty (figures in parentheses represent proportion to total untenured faculty in that rank).

| | Prof. | Assoc. | Asst. | Instr. |
|---|---|---|---|---|
| 1973-74 | 1(.07) | 2(.05) | 2(.04) | 3(.04) |
| 1974-75 | 0(.00) | 1(.02) | 1(.02) | 3(.04) |
| 1975-76 | 1(.07) | 0(.00) | 1(.02) | 2(.03) |
| 1976-77 | 0(.00) | 0(.00) | 1(.02) | 2(.03) |
| 1977-78 | 0(.00) | 1(.02) | 0(.00) | 3(.04) |

Hence, new appointments to the untenured faculty over the last five years have been made at the following rates: Professor, NP=.03; Associate Professors, NAC=.02; Assistant Professors, NAT=.02; and Instructors, NI=.04.

Table 7

Number of untenured faculty leaving (figures in parentheses represent proportion to total untenured faculty in that rank).

| | Prof. | Assoc. | Asst. | Instr. |
|---|---|---|---|---|
| 1973-74 | 0(.00) | 1(.03) | 2(.04) | 3(.04) |
| 1974-75 | 0(.00) | 2(.04) | 0(.00) | 1(.01) |
| 1975-76 | 1(.07) | 0(.00) | 0(.00) | 1(.01) |
| 1976-77 | 1(.07) | 0(.00) | 1(.02) | 2(.03) |
| 1977-78 | 0(.00) | 1(.02) | 0(.00) | 1(.01) |

Thus, for the last five years, untenured faculty members have been leaving the university at the following rates: Professor, LP=.03; Associate Professor LAC=.02; Assistant Professor LAT=.01; Instructors LI=.02.

In the past, untenured instructors remained in that rank for an average of seven years ($y_i$=7) before being promoted or leaving; Assistant Professors, five years, $y_{at}$=5, and Associate

Professor, four years, $y_{ac}=4$.

Table 8

Proportion of untenured faculty starting at the same time who were eventually promoted to the next rank.

| | Assoc. | Asst. | Instr. |
|---|---|---|---|
| 1973-74 | .4 | .5 | .3 |
| 1974-75 | .3 | .5 | .3 |
| 1975-76 | .3 | .4 | .2 |
| 1976-77 | .1 | .2 | .1 |
| 1977-78 | .2 | .1 | .2 |

Hence, the average proportion of untenured faculty starting at the same time who are eventually promoted for each rank is: instructor, $n_I=.z$; assistant professor, $n_{at}=.3$; and associate professor, $n_{ac}=.3$.

Therefore, the promotion rate for the untenured faculty in each rank can be determined: Instructors, $m_i=.03$; Assistant Professors, $m_{at}=.06$ and Associate Professors, $m_{ac}=.08$, using the formula $m=n/y$.

On the average, instructors hold that rank for seven years, $p_i=7$, before they are granted tenure; Assistant Professors, five years, $p_{at}=5$; Associate Professor, four years $p_{ac}=4$; and Professor two years, $p_p=2$.

Table 9

Proportion of untenured faculty starting at the same time who were eventually granted tenure.

| | Prof. | Assoc. | Asst. | Instr. |
|---|---|---|---|---|
| 1973-74 | .5 | .4 | .3 | .1 |
| 1974-75 | .4 | .3 | .3 | .1 |
| 1975-76 | .4 | .3 | .2 | .1 |
| 1976-77 | .3 | .4 | .2 | .1 |
| 1977-78 | .3 | .3 | .1 | .0 |

hence the average proportions over the last five years are as follows: Professor, $q_p=.4$; Associate Professor, $q_{ac}=.3$; Assistant Professor, $q_{at}=.2$; and Instructor, $q_i=.1$.

Using the formula $T=q/p$, we obtain the tenure-receiving rates for each rank: Professor, $T_p=.2$; Associate Professor, $T_{ac}=.08$; Assistant Professor, $T_{at}=.04$; and Instructor, $T_i=.01$.

So if it is desired to project the number of untenured assistant professors for the 1975-76 year we must add the newly appointed (from outside the university) untenured assistant professors, $(NAT)(UAT_{n-1})$, to those of the previous year, $(UAT_{n-1})$, plus the untenured instructors who will be promoted to the rank of assistant professor $(M_i)(UI_{n-1})$. From this sum, we must subtract the untenured assistant professors to be promoted to a higher rank, $(m_{at})(UAT_{n-1})$, those who are leaving the university (LAT) $(UAT_{n-1})$ and those to be granted tenure $(T_{at})(UAT_{n-1})$ Mathematically;

$$UAT_n=UAT_{n-1}+(NAT)(UAT_{n-1})+(M_i)(UI_{n-1})-(M_{at})(UAT_{n-1})-(LAT)(UAT_{n-1})-(T_{at})(UAT_{n-1})$$

Substituting we have:

$$=60+(.02)(60)+(.03)(72)-(.06)(60)-(.01)(60)-(.04)(60)$$
$$=60+1.20+2.16-3.6-.6-2.4$$
$$=63.36-6.60$$
$$=56.76$$

or approximately 57 untenured assistant professors will be on the 1975-76 staff.

Again, successive iterations are necessary, in which $UAT_n$ for one year becomes $UAT_{n-1}$ for the next, for projections for any given length of time. Similar computation can be made for the projection of untenured associate professors. However, ad-

justments analogous to these made for the tenured instructors and professors must be made for the untenured instructors and professors.

Now that the absolute number of untenured faculty in each of the rank can be projected, the question of how many of these will receive tenure still lingers. But it now can be answered easily. To determine the number receiving tenure in a particular rank for any given year, it is necessary only the multiply the tenure-granting rate, t, for that rank times the number of untenured faculty members having that rank for the previous year. To illustrate, let us project the number of assistant professors ($NTAT_n$) receiving tenure for the 1975-76 academic year.

$NTAT_n=(UAT_{n-1})(t_{at})=(60)(.04)=2.4$

or approximately 2 assistant profrssors will receive tenure for the 1975-76 academic year. Similar calculations are used to determine the newly tenured instructors ($NTI_n$), associate professors ($NTAC_n$) and professors ($NTP_n$). Thus to project the total number of tenured faculty in any of the ranks for any length of time it is only necessary to add the number of preciously tenured members to the number of newly tenured up to the given time period.

Let us look at the terms basic to this model and their relation to each other. The letters I, AT, AC, and P represent instructor, assistant professor, associate professor and professor, respectively. However, in this section the letter F, representing faculty, will be used to elimate some redundancy.

Definition of terms:

TF--tenured faculty.

RS --resigning rate for tenured faculty.

RT --retiring rate for tenured faculty.

UF--untenured faculty.

NF--rate for new appointments to untenured faculty.

LF--rate for untenured faculty leaving the university (resignations, retirements, unrenewed contracts, deaths, etc.)

$n_F$--percentage of untenured faculty, employed at the same time, that eventually became promoted to a higher rank.

$y_F$--average number of years untenured faculty remain in each of the ranks.

$m_F$--rate at which the untenured faculty is promoted to higher rank.

$t_F$--tenure-granting rate for the faculty.

$q_F$--percentage of untenured faculty, employed at the same time, that eventually receive tenure,

p --average number of years the faculty spent in non-tenure status,

NTF--newly tenured faculty for any given year

$w_F$--the promotion rate for tenured faculty.

$x_F$--the percentage of tenured faculty, employed at the same time, that eventually became promoted to a higher rank.

$z_F$--the average number of years tenured faculty.

All that remains to complete the model is the addition of the different components--the carry-over and the newly tenured faculty members from each of the ranks. Hence, to project the total number of tenured faculty members for a given year, the following equation can be used:

$$T_n = TI_n + TAT_n + TAC_n + TP_n + NTI_n + NTAT_n + TAC_n + NTP_n$$

To illustrate the value of this model, let us project the number of tenured faculty members that will be employed by City University in the College of Education for the 1977-78 academic year.

1. Carry-over tenured faculty

a) Instructors: $TI_n = TI_{n-1} - (RT_I)(TI_{n-1}) - (RS_I)(TI_{n-1}) - (w_I)(TI_{n-1})$

1978-79 $TI_n = 1 - (.00)(1) - (.00)$

$= .08$

1979-80 $TI_n = .08 - (.00)(.08) - (.00)(.08) - (.02)(.08)$

$= .08$

1980-81 $TI_n = .08 - (.00)(.08) - (.00)(.08) - (.02)(.08)$

$= .08$

or approximately 1 carry-over tenured instructor will be employed.

b) Assistant Professors:

$$TAT_n = TAT_{n-1} + (w_I)(TI_{n-1}) - (RT_{at})(TAT_{n-1}) - (RS_{at})(TAT_{n-1}) - (w_{at})(TAT_{n-1})$$

1978-79 $TAT_n = 20 + (.02)(1) - (.03)(20) - (.03)(20) - (.04)(20)$

$= 18.02$

1979-80 $TAT_n = 18.02+(.02)(1)-(.03)(18.02)$
$-(.03)(18.02)-(.04)(18.02)$
$= 16.24$

1980-81 $TAT_n = 16.24+(.02)(1)-(.03)(16.24)$
$-(.03)(16.24)-(.04)(16.24)$
$= 14.7$

c) Associate Professors

$$TAC_n = TAC_{n-1}+(w_{at})(TAT_{n-1})-(RT_{ac})(TAC_{n-1})$$
$$-(RS_{ac})(TAC_{n-1})-(w_{ac})(TAC_{n-1})$$

1978-79 $TAC_n = 47+(.04)(20)-(.03)(47)-(.04)(47)$
$-(.05)(47)$
$= 41.4$

1979-80 $TAC_n = 41.4+(.04)(18.02)-(.03)(41.4)$
$-(.04)(41.4)$
$= 37.2$

1980-81 $TAC_n = 37.2+(.04)(16.24)-(.03)(37.2)$
$-(.04)(37.2)-(.05)(37.2)$
$= 33.3$

d) Professors: $TP_n = TP_{n-1}+(w_{ac})(TAC_{n-1})-(RT_p)(TP_{n-1})$
$-(RS_p)(TP_{n-1})$

1978-79 $TP_n = 53+(.05)(47)-(.03)(53)-(.04)(53)$
$= 51.7$

1979-80 $TP_n = 51.7+(.05)(41.4)-(.03)(51.7)-(.04)(51.7)$
$= 50.2$

1980-81 $TP_n = 50.2+(.05)(37.2)-(.03)(50.2)-(.04)(50.2)$
$=48.6$

Now that the absolute numbers for the tenured for each rank has been determined all that is needed for tenure proportions are similar figures for the untenured.

a) Instructors: $UI_n = UT_{n-1}+(NI)(UT_{n-1})-(m_I)(UI_{n-1})$
$-(LI)(UI_{n-1})-(T_I)(UI_{n-1})$

1978-79 $UI_n = 72+(.04)(72)-(.03)(72)-(.02)(72)$
$-(.01)(72)$
$= 70.7$

1979-80 $UI_n = 70.7+(.04)(70.7)-(.03)(70.7)$
$-(.02)(70.7)$
$= 69.3$

1980-81 $UI_n = 69.3+(.04)(68.3)-(.03)(69.3)$
$-(.02)(69.3)-(.01)(69.3)$
$= 67.9$

b) Assistant Professors:

$UAT_n = UAT_{n-1}+(NAT)(UAT_{n-1})+(m_I)(UI_{n-1})$
$(m_{at})(UAT_{n-1})-(LAT)(UAT_{n-1})-(T_{at})(UAT_{n-1})$

1978-79 $UAT_n = 60+(.02)(60)+(.03)(72)-(.06)(60)$
$-(.01)(60)-(.04)(60)$
$= 56.8$

1979-80 $UAT_n = 56.8+(.02)(56.8)+(.03)(70.7)$
$-(.06)(56.8)-(.01)(56.8)-(.04)(56.8)$
$= 53.9$

1980-81 $UAT_n = 53.9+(.02)(53.9)+(.03)(69.3)$
$-(.06)(53.9)-(.01)(53.9)-(.04)(53.9)$
$= 51.1$

c) Associate Professors:

$$UAC_n = UAC_{n-1} + (NAC)(UAC_{n-1}) + (m_{at})(UAT_{n-1}) - (m_{ac})(UAC_{n-1}) - (LAC)(UAC_{n-1}) - (T_{ac})(UAC_{n-1})$$

1978-79 $UAC_n = 52 + (.02)(52) + (.06)(60) - (.08)(52) - (.02)(52) - (.08)(52)$

$= 47.3$

1979-80 $UAC_n = 47.3 + (.02)(47.3) + (.06)(56.8) - (.08)(47.3) - (.02)(47.3) - (.08)(47.3)$

$= 43.1$

1980-81 $UAC_n = 43.1 + (.02)(43.1) + (.06)(53.9) - (.08)(43.1) - (.02)(43.1) - (.08)(43.1)$

$= 39.4$

d) Professors: $UP_n = UP_{n-1} + (NP)(UP_{n-1}) + (m_{ac})(UAC_{n-1}) - (LP)(UP_{n-1}) - (T_p)(UP_{n-1})$

1978-79 $UP_n = 16 + (.03)(16) + (.08)(52) - (.03)(16) - (.2)(16)$

$=16.9$

1979-80 $UP_n = 16.9 + (.03)(16.9) + (.08)(47.3) - (.03)(16.9) - (.2)(16.9)$

$= 17.3$

1980-81 $UP_n = 17.3 + (.03)(.7.3) + (.08)(43.1) - (.03)(17.3) - (.2)(17.3)$

$= 17.2$

Thus the proportions for the three years are:

| | Untenured | | | Tenured | | | Total | | | % Tenured | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Instructors | 70.7 | 69.3 | 67.9 | .08 | .08 | .08 | 70.8 | 69.4 | 68.0 | .00 | .00 | .00 |
| Assistant Professors | 56.8 | 53.9 | 51.1 | 18.00 | 16.20 | 14.70 | 74.8 | 70.1 | 65.8 | 24 | 23 | 24 |
| Associate Professors | 47.3 | 43.1 | 39.4 | 41.4 | 37.20 | 33.30 | 88.7 | 80.3 | 72.7 | 47 | 46 | 46 |
| Professors | 16.9 | 17.3 | 17.2 | 51.70 | 50.20 | 48.6 | 68.6 | 67.5 | 65.8 | 75 | 74 | 74 |
| TOTALS | 191.7 | 183.6 | 175.6 | 111.20 | 103.7 | 96.7 | 302.9 | 287.3 | 272.3 | 37 | 36 | 36 |

Comments:

This model utilizes the elementary proposition that future tenure proportions are determined by additions and departures from the tenured and untenured faculties. Its most basic assumption is that the rates of these additions and departures will remain constant throughout the proposed projection period. This discussion does not become involved with quotas or limiting tenure to a predetermined proportion; its sole objective is to provide a means by which decision-makers can see what lies ahead if their present tenure-granting mechanism is allowed to continue.

The rates used in this model, which are based on the institution's past practices, can be altered to test the effects of the adoption of new policies. For example, the retiring rate is related to the university's retirement policy. Thus, the raising or lowering of the mandatory retirement age would definitely affect this variable. Similarily changes in policies involving new appointments and tenure-granting could also have serious effects on the respective variables. However, some of the variables, especially the rate of departure through resigning, are more dependent on forces outside the university.

Also for those who feel that the five year peroid is not a sufficient base for projections of this nature, a longer time period can be used. However, caution must be exercised when using longer time periods because of the numerous other factors that influence faculty size and tenure proportions. It is suggested that data that determine the rates use in this model be up dated

every three to five years so that trends may be detected.

Finally, it is hoped the decision-makers will use this model and any other means available to help in resolving the critical problems arising from poor staff planning. In the face of stablizing and declining enrollments and tight budgets, proper planning in an absolute necessity. There can be no nationwide standard for tenure proportion for each institution, even each department, has its own unique situations. Hence, each unit must review its own tenure-granting policies, keeping its program goals foremost in mind. A tenure proportion that is "too high" could seriously reduce program flexibility and one that is "too low", because of the lack of job security and academic freedom which comes along with tenure, tends to stymie creative research for fear of reprisals.

# A Schematic Representation of the Model